

REVIEW OF *OREGOCERATA* RAZOWSKI (LEPIDOPTERA: TORTRICIDAE:
EULIINI) WITH DESCRIPTIONS OF FOUR NEW SPECIES

JÓZEF RAZOWSKI AND JOHN W. BROWN

(JR) Polish Academy of Sciences, Institute of Systematic Zoology, Slawkowska 17, Krakow, Poland; (JWB) Systematic Entomology Laboratory, PSI, Agricultural Research Service, U.S. Department of Agriculture, % National Museum of Natural History, Smithsonian Institution, P.O. Box 37012, MRC 168, Washington, DC 20013-7012, U.S.A. (e-mail: jbrown@sel.barc.usda.gov)

Abstract.—*Oregocerata* is a poorly known genus restricted to the Andes and its associated ranges in northwestern South America (i.e., Colombia, Venezuela, Ecuador, Bolivia) usually above 2000 m. Specimens are exceedingly rare in collections; most species are known only from the holotype male. We describe and illustrate four **new species**: *O. triangulana* (TL: Colombia), *O. caucana* (TL: Colombia), *O. quadrifurcata* (TL: Colombia), and *O. submontana* (TL: Venezuela); and we propose a **new combination**, *Oregocerata chrysodetis* (Meyrick). As currently defined the genus includes 9 species. It is assigned to Euliini on the basis of the possession of a characteristic hairpencil on the prothoracic leg.

Key Words: Tortricinae, systematics, Andes, Colombia, Ecuador, Bolivia, Venezuela

Oregocerata Razowski, 1988, is one of several poorly known genera of Neotropical Euliini apparently restricted to the higher elevations of the Andes and its associated ranges in northwestern South America. Species of *Oregocerata* have been recorded from Colombia, Venezuela, Ecuador, and Bolivia, primarily at elevations above about 2000 m. Specimens are rare in collections, with about half the species represented only by the holotype. Nothing is known of the biology.

Originally described as monotypic, the genus includes four described species: *O. orcula* Razowski, *O. cladognathos* Razowski, *O. rhyparograptus* Razowski and Becker, and *O. zonalis* Razowski and Becker. Four new species and one new combination, *O. chrysodetis* (Meyrick), are proposed herein. Superficially, all species share elongate labial palpi (length 2.0–3.0 times the hori-

zontal diameter of the compound eye), long antennal cilia in the male, and a patch of long, flattened orange scales extending from the base of the proboscis to the area between the bases of the foreleg coxae. The male genitalia usually are characterized by a short, somewhat digitate process at the inner base of the sacculus; a narrow, fringed flange or group of spiniform setae from the dorsum of the phallus (at the junction of the phallobase and aedeagus) representing a modification of the anellus; and a highly modified distal portion of the gnathos. However, because the genitalic characters have a mosaic distribution among the included species, none is a convincing synapomorphy for the genus. Females are known only for *O. orcula* and *O. zonalis*. The genus is assigned to Euliini based on the possession of a characteristic hairpencil of the prothoracic leg in the male (Brown 1990).

Table 1. Male genitalia characters distinguishing species of *Oregocerata*. See text for description of characters and character states.

Species	Sacculus Lobe	Anellus	Gnathos	Uncus	Socii
<i>orcula</i>	absent	unmodified	moderate	unmodified	broad distally
<i>cladognathos</i>	weak	unmodified	long	unmodified	digitate throughout
<i>zonalis</i>	weak	unmodified	long	reflexed distally	broad throughout
<i>triangulana</i>	present	with spines	very long	unmodified	digitate throughout
<i>rhyparograptata</i>	present	with thorns	long	unmodified	digitate throughout
<i>submontana</i>	present	with spines	moderate	unmodified	digitate throughout
<i>quadrifurcata</i>	present	unmodified	short, blunt	expanded distally	broad throughout
<i>caucana</i>	present	with spines	short, curved	unmodified	digitate throughout

The purpose of this paper is to review the four described species, describe and illustrate four new species, and propose one new combination in the genus. The following institutional abbreviations are used in the text: BMNH = The Natural History Museum, London, England; UCB = Essig Museum of Entomology, University of California, Berkeley, USA; USNM = National Museum of Natural History, Washington, D.C., USA; and VBC = Vitor O. Becker personal collection, Planaltina, Brazil. Other abbreviations are as follows: ca. = circa (approximately); GS = genitalia slide; n = number examined.

SYSTEMATICS

Oregocerata Razowski, 1988

Oregocerata Razowski 1988: 392, 1997: 92, 1999: 328; Powell et al. 1995: 145; Razowski and Becker 2002. Type species: *Oregocerata orcula* Razowski 1988, by original designation.

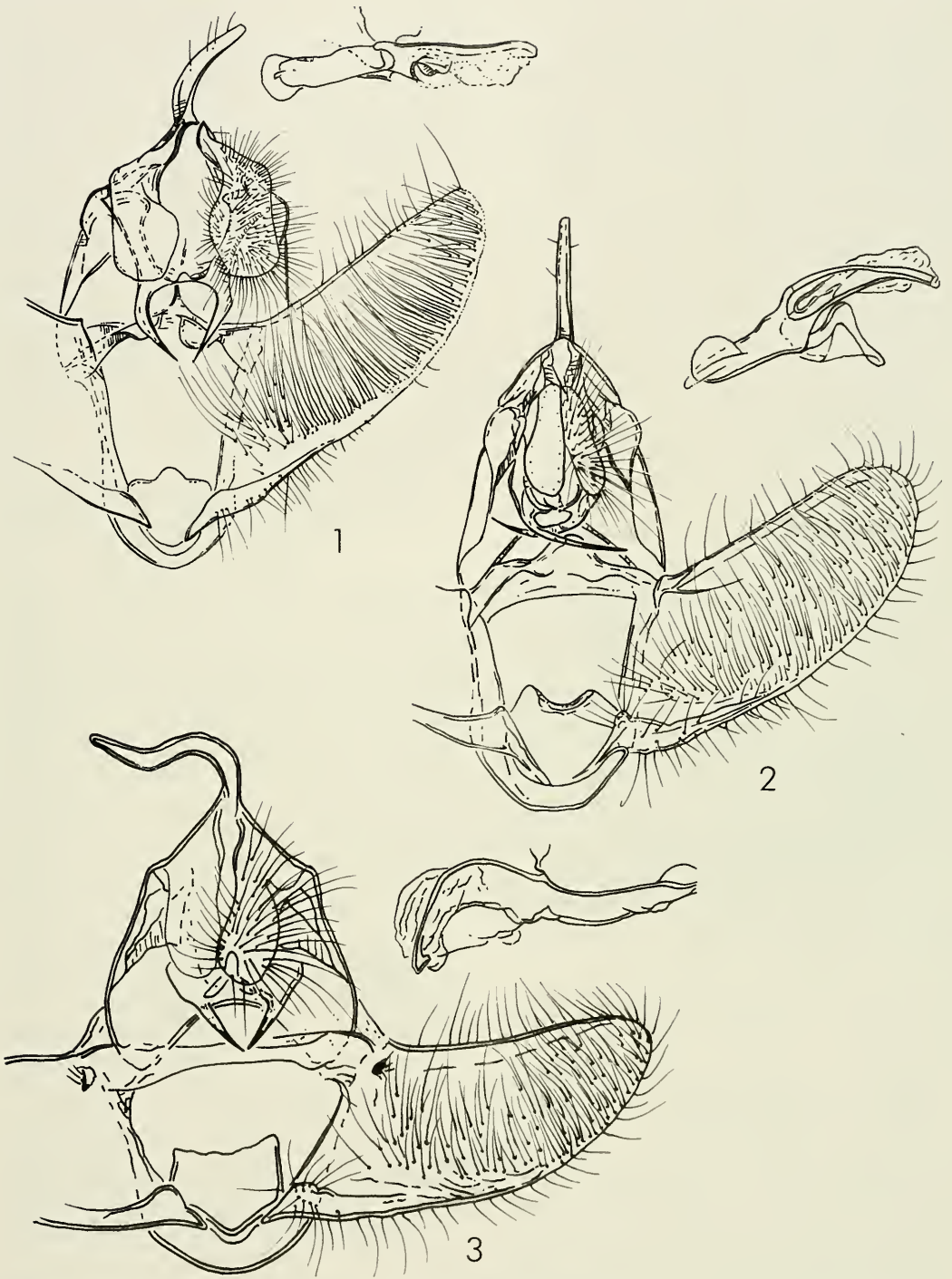
The species included in *Oregocerata* (excluding *O. chrysodetis* that lacks an abdomen) can be separated by structures of the male genitalia. A summary of the most conspicuous characters is presented in Table 1. In Table 1, "Sacculus lobe" refers to the digitate process at the inner base of the sacculus. It is absent in *O. orcula*, represented by a weakly swollen, setose mound in *O. zonalis* and *O. cladognathos*, and is a prominent digitate process in the remaining species. Anellus "with spines" refers to the

finely spined membrane attached to the dorsum of the phallus at the junction of the phallobase and the aedeagus. It is conspicuous and well defined in *O. caucana*, *O. triangulana*, and *O. rhyparograptata* (the small projections are more thornlike than narrow spinelike in the last), and weak or absent in the remaining species. "Gnathos" refers to the shape and/or length of the distal portion of the gnathos arms. The gnathos has an unmodified basal portion and a variably modified distal part, which is extremely short and blunt in *O. quadrifurcata*, short (less than 0.25 the length of the basal portion of the gnathos) and curved in *O. caucana*, and slender and long (0.5–0.7 times the length of the basal portion) to very long (equal to or longer than the basal portion) in the remaining species. "Uncus" refers to the shape of the uncus, which is slightly modified in some species, but highly divergent in *O. quadrifurcata*, with an expanded, four-pointed apical process, and somewhat reflexed dorsally in *O. zonalis*. "Socii" refers to the shape and relative width of the socii.

Oregocerata orcula Razowski (Figs. 1, 9)

Oregocerata orcula Razowski 1988: 393 (description, illustration of male and female genitalia); Powell et al. 1995: 145 (checklist).

Diagnosis.—Superficially, *O. orcula* is similar to its congeners, with a grayish



Figs. 1-3. Male genitalia of *Oregocerata*; valvae spread, aedeagus removed. 1, *O. orcula*, 2, *O. cladoquathos*, 3, *O. zonalis*.

brown forewing lacking distinct pattern elements. The male genitalia (Fig. 1) are characterized by the absence of the digitate process from the base of the sacculus, unmodified anellus, moderately long distal processes of the gnathos, simple uncus, and extremely broad distal portion of the socii. The last is the most conspicuous autapomorphy for the species. In the female genitalia (Fig. 9) the ventral lobes of the eighth tergite are large; and the anterior portion of the sterigma is rounded, strongly sclerotized, and slightly asymmetrical.

Holotype.—♂, Bolivia, Cochabamba, Incachaca, tropical cloud area, 2,100 m, 27 Aug–5 Sep 1956, L. Peña (USNM).

Paratype.—1 ♀, same data as holotype.

Oregocerata cladognathos Razowski
(Fig. 2)

Oregocerata cladognathos Razowski 1999: 328 (description, illustration of male genitalia).

Diagnosis.—*Oregocerata cladognathos* is similar to its congeners in forewing size and pattern. The male genitalia (Fig. 2) can be distinguished by the slightly swollen base of the sacculus, unmodified anellus, moderately long distal processes of the gnathos, simple uncus, and digitate socii.

Holotype.—♂, Ecuador, Pichincha Province, km 40 via Quito-Pto. Quito, 25 Mar 1986, S. McKamey (UCB).

Oregocerata zonalis Razowski and Becker
(Figs. 3, 10)

Oregocerata zonalis Razowski and Becker 2002: 316 (description, illustration of male and female genitalia).

Diagnosis.—The male genitalia of *O. zonalis* (Fig. 3) are most similar to those of *O. orcula* and *O. cladognathos*, with the basal lobe of the sacculus poorly developed and the distal portion of the gnathos relatively long and slender. *O. zonalis* can be distinguished by the simple transtilla, which is bilobed in *O. orcula* and has a single median lobe in *O. cladognathos*, and the api-

cally reflexed distal portion of the uncus, which is unique within the genus. The socii of the three are also distinct: narrow and digitate in *O. cladognathos*, conspicuously broadened in the distal portion in *O. orcula*, and moderately broad throughout in *O. zonalis*. The female genitalia (Fig. 10) have the sterigma tapering proximally, broader and less strongly sclerotized than in *O. orcula*.

Holotype.—♂, Ecuador, Loja Province, Loja, 2750, 21 Dec 1992, V. Becker (VBC).

Paratypes.—1 ♂, same data as holotype; 2 ♂, Ecuador, Morona, Indanza, 2,800 m, 24 Dec 1992, V. Becker (VBC); 1 ♀, Ecuador, Tungurahua, Patata, 300 m, 7 Dec 1992, V. Becker (VBC).

Oregocerata triangulana Razowski and
Brown, new species
(Figs. 4, 11)

Diagnosis.—The forewing of *O. triangulana* (Fig. 11) is conspicuously longer than that of its congeners, and has an ill-defined brown trapezoidal patch in the middle. The male genitalia (Fig. 4) are similar to those of *O. cladognathos* and *O. rhyparograptia*, with elongate distal processes of the gnathos and a somewhat straight distal portion of the aedeagus. The genitalia can be distinguished from those of *O. cladognathos* by the longer distal processes of the gnathos, conspicuous basal lobe of the sacculus, shorter aedeagus, and spiny lobes of the anellus. They differ from *O. rhyparograptia* by the longer distal processes of the gnathos, the slightly more slender aedeagus, and the spiny anellus, which is thorny in *O. rhyparograptia* (i.e., the projections are broader and/or shorter).

Description.—*Head*: Vertex pale grayish brown, rust ventrolaterally; length of labial palpus ca. 3 times horizontal diameter of compound eye, pale grayish brown on inner surface, pale orange brown on outer surface; fan-shaped patch of flattened orange scales extending from base of proboscis to between foreleg coxae, with a few scales at middle of patch extending ca. 2 times length of other scales. *Thorax*: Dorsum pale



Figs. 4-6. Male genitalia of *Oregocerata*; valvae spread, aedeagus removed. 4, *O. triangulana*, 5, *O. rhy-parograptia*, 6, *O. submontana*.

grayish brown. Prothoracic leg with hair-pencil. Forewing length 12.0 mm ($n = 3$), broad, expanding terminally, with costa uniformly convex, apex short, termen rather straight; ground color whitish, weakly suffused with scattered tiny brown specks and faint brown striae, especially in distal half; costa with irregular band of brown scales; a pale trapezoidal brown blotch near middle of wing. Fringe cream, whiter towards tornus. Hindwing white, tinged with cream on periphery, weakly strigulated with pale gray brown in anteroterminal portion. *Abdomen*: Male genitalia (Fig. 4; drawn from GS USNM 68602) with tegumen rather narrow; uncus comparatively short, curved ventrally from near base, rounded apically; socii moderately large, densely setose, ca. 0.8 length of basal portion of gnathos; gnathos arms relatively slender, distal processes longer than basal portion; transtilla broad, shallow W-shaped, weakly sclerotized at middle; valva rounded distally, with costa and ventral margin weakly curved; a conspicuous, dorsally projecting, digitate process at base of sacculus; phallus short, phallobase slightly longer than aedeagus; a short, spiny skirt at dorsal junction of phallobase and aedeagus (= lobes of anellus); aedeagus slender, with a sclerotized distal process; vesica with one large and two small, fine cornuti. Female: Unknown.

Holotype.—♂, Colombia, Cauca, Páramo de Parace, Lake San Rafael, 29 Jan 1959, J. F. G. Clarke (USNM).

Paratypes.—2 ♂, same data as holotype (USNM).

Etymology.—The specific epithet refers to the subtriangular patch of the forewing.

Oregocerata rhyparograptata

Razowski and Becker

(Fig. 5)

Oregocerata rhyparograptata Razowski and Becker 2002: 316 (description, illustration of male genitalia).

Diagnosis.—The male genitalia of *O. rhyparograptata* (Fig. 5) are most similar to

those of *O. triangulana*, with a well-developed basal lobe of the sacculus, digitate socii, and long, slender distal processes of the gnathos. *O. rhyparograptata* can be distinguished by the slightly longer phallus with a thorny anellus and the conspicuously shorter distal processes of the gnathos.

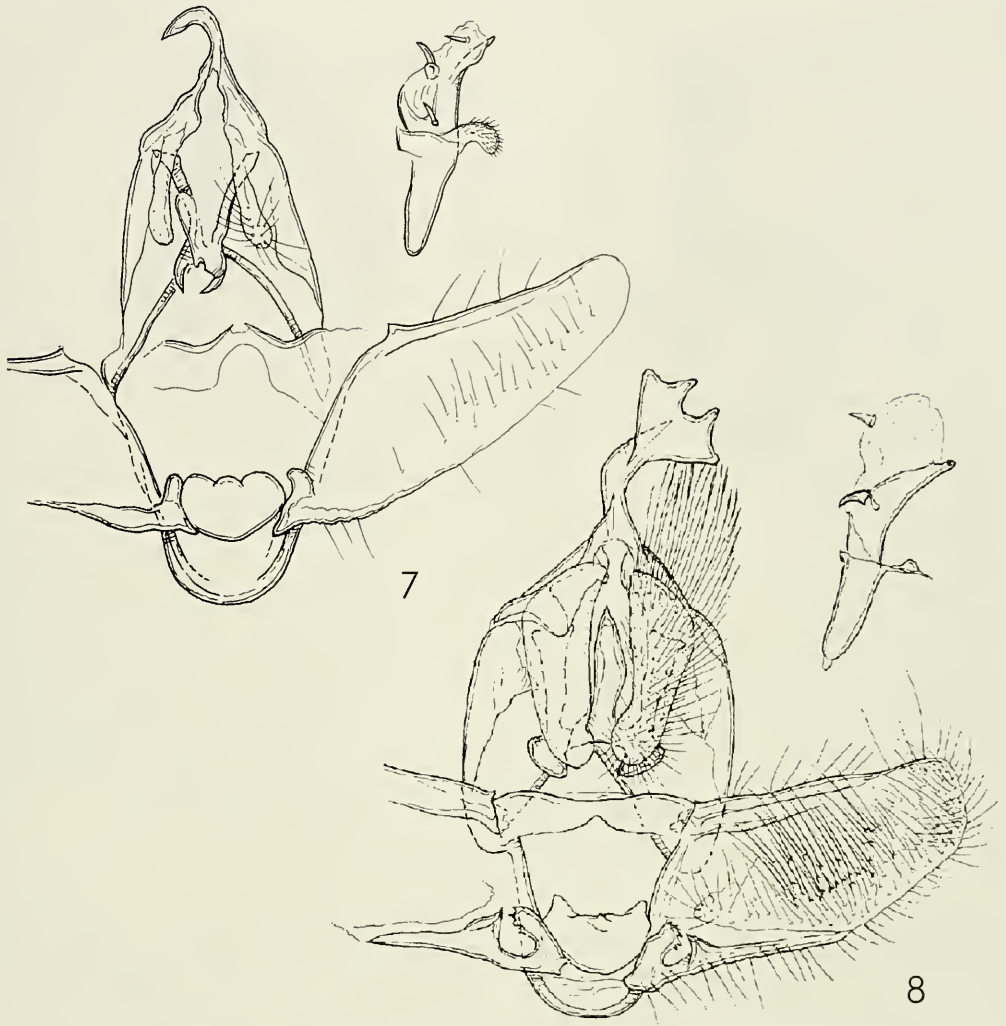
Holotype.—♂, Ecuador, Pastaza Province, Mera, 1,300 m, Dec 1992, V. Becker (VBC).

Oregocerata submontana Razowski and Brown, new species

(Figs. 6, 12)

Diagnosis.—The poorly developed forewing pattern of *O. submontana* (Fig. 12) is similar to most other congeners. The male genitalia (Fig. 6) of *O. submontana* can be distinguished by the shorter uncus, shorter socii, shape of the distal portion of the aedeagus, and the absence of cornuti.

Description.—*Head*: Vertex pale grayish brown, rust ventrolaterally; length of labial palpus ca. 3 times horizontal diameter of compound eye, pale grayish brown on inner surface, pale orange brown on outer surface; fan-shaped patch of flattened orange scales between foreleg coxae and base of proboscis, with a few scales at middle of patch extending posterad ca. 2 times length of other scales. *Thorax*: Dorsum pale grayish brown. Prothoracic leg with hair-pencil. Forewing length 10.5 mm ($n = 1$), broad, expanding terminally, with costa uniformly convex, termen rather straight; [specimen worn] ground color whitish, weakly suffused with scattered tiny brown specks; a pale brown median fascia from costa ca. 0.6 distance from base; basal 0.3 with darker scaling. [Fringe lacking]. Hindwing white, weakly strigulated with pale gray-brown in anteroterminal portion. *Abdomen*: Male genitalia (Fig. 6; drawn from GS USNM 95215) with tegumen rather narrow; uncus shorter than in other species, curved ventrally, pointed apically; socii broad, densely setose, ca. 0.6× length of basal portion of gnathos; gnathos arms relatively slender, distal processes less than twice as long as



Figs. 7–8. Male genitalia of *Oregocerata*; valvae spread, aedeagus removed. 7, *O. caucana* 8, *O. quadrifurcata*.

basal portion; transtilla broad, shallow W-shaped, weakly sclerotized at middle; valva somewhat parallel-sided, with costa nearly straight and ventral margin weakly upcurved in distal 0.3; a conspicuous, dorsally projecting, digitate process at base of sacculus; phallus short, phallobase about the same length as aedeagus; a short, thorny skirt at dorsal junction of phallobase and aedeagus; aedeagus slender, with a sclerotized distal process; vesica without cornuti. Female: Unknown.

Holotype.—♂, Venezuela, Lara, Yacum-

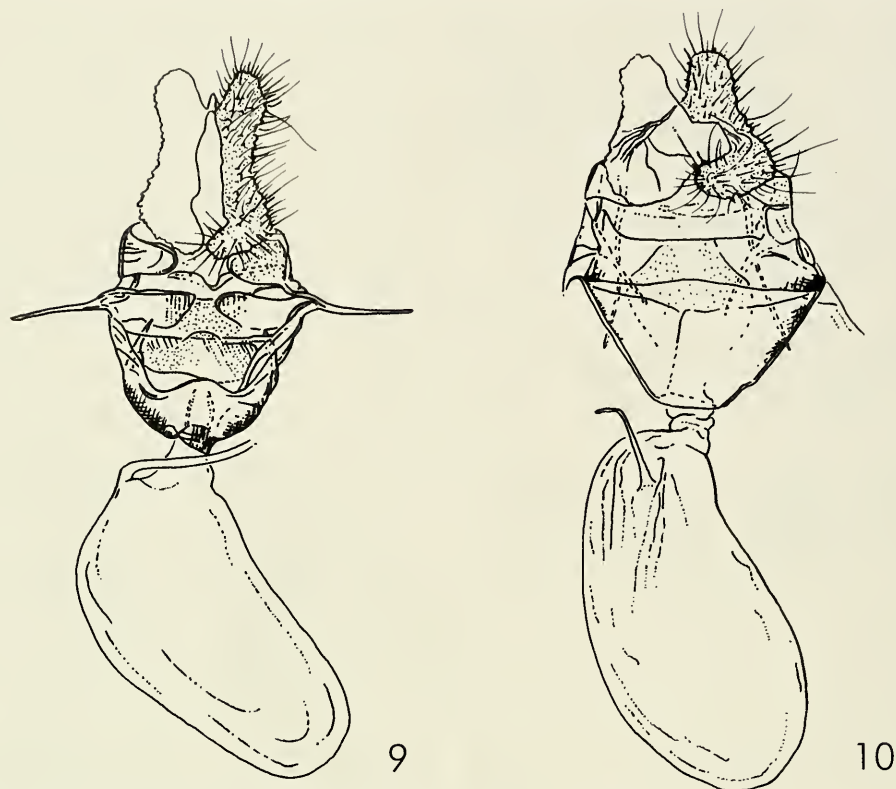
bu National Park, 13 km SE Sanare, 4,800', cloud forest, 4–7 Mar 1978, J. B. Heppner (USNM).

Etymology.—The specific epithet refers to the submontane distribution of this species.

***Oregocerata caucana* Razowski and Brown, new species**

(Figs. 7, 13)

Diagnosis.—*Oregocerata caucana* (Fig. 13) is most similar to *O. chrysodetis* (see Clarke 1958: 235) in forewing length and



Figs. 9–10. Female genitalia of *Oregocerata*. 9, *O. orcula* 10. *O. zonalis*.

maculation: both are pale orange with an ill-defined fascia across the middle of the wing, angled outward near the lower edge of the discal cell. The forewing pattern is slightly darker orange in *O. caucana*, with the apical region scaled with orange-brown. Because the holotype of *O. chrysodetis* lacks the abdomen, the genitalia cannot be compared. On the basis of the aedeagus, *O. caucana* appears to be most closely related to *O. rhyarograptia* and *O. triangulana*; the spiny lobes of the anellus are most similar to those of the latter. *Oregocerata caucana* can be distinguished from its congeners by the short, curved distal processes of the gnathos, which are considerably shorter than the basal portion of the gnathos (Fig. 7). The latter is the most conspicuous autapomorphy for this species.

Description.—**Head:** Vertex whitish, tinged with pale brownish gray; labial pal-

pus pale grayish brown on inner surface, pale orange brown on outer surface; fan-shaped patch of flattened orange scales between foreleg coxae and proboscis, with a few longer scales at middle of patch. **Thorax:** Dorsum concolorous with head, slightly browner anteriorly. Prothoracic leg with hairpencil. Forewing length 8.7 mm ($n = 1$); ground color whitish, densely strigulated and suffused with pale orange with sparse, small, inconspicuous dark specks; an ill-defined, pale fascia across middle of wing, angled outward at lower edge of discal cell; a row of 5–6 small brown dots along termen. Fringe concolorous with ground color, with dark brown median line. Hindwing whitish, tinged with cream in apical third. **Abdomen:** Male genitalia (Fig. 7; drawn from GS USNM 68623) with tegumen rather narrow; uncus simple, slender, rather short, curved, pointed apically; socii

comparatively slender, densely setose, ca. 0.8 length of basal portion of the gnathos; gnathos arms relatively slender, with distal portion extremely short, weakly curved; transtilla narrow, inverted U-shaped, weakly sclerotized at middle; valva broadest at base, gradually attenuate distally, with costa nearly straight and ventral margin weakly curved throughout; sacculus with a comparatively short, dorsally projecting, digitate process at base; phallus short, fairly broad, curved dorsad terminally; phallobase about as long as aedeagus; a short, spiny skirt at junction of phallobase and aedeagus; vesica with one large and two small cornuti, and a sclerotized distal plate. Female: Unknown.

Holotype.—♂, Colombia, Cauca, Páramo de Parace, Lake San Rafael, 27 Jan 1959, J. F. G. Clarke (USNM).

Etymology.—The specific epithet refers to the Cauca region, Colombia.

Oregocerata chrysodetis (Meyrick, 1926),
new combination

Tortrix chrysodetis Meyrick 1926: 248 (description); Clarke 1958: 235 (illustration of adult).

“*Eulia*” *chrysodetis*: Powell et al. 1995: 146 (checklist).

Discussion.—Clarke (1958: 235) illustrated the holotype of *Tortrix chrysodetis*, which lacks the abdomen. Because the genitalia are lost, this species has defied contemporary generic assignment; it was treated as “*Eulia*” *chrysodetis* by Powell et al. (1995), indicating uncertain placement. The discovery of *Oregocerata caucana* (described above), with a similar forewing shape, size, and pattern, suggests that *Eulia chrysodetis* likely belongs in *Oregocerata*. Although it is possible that *O. chrysodetis* and *O. caucana* are conspecific, subtle differences in forewing markings suggest otherwise.

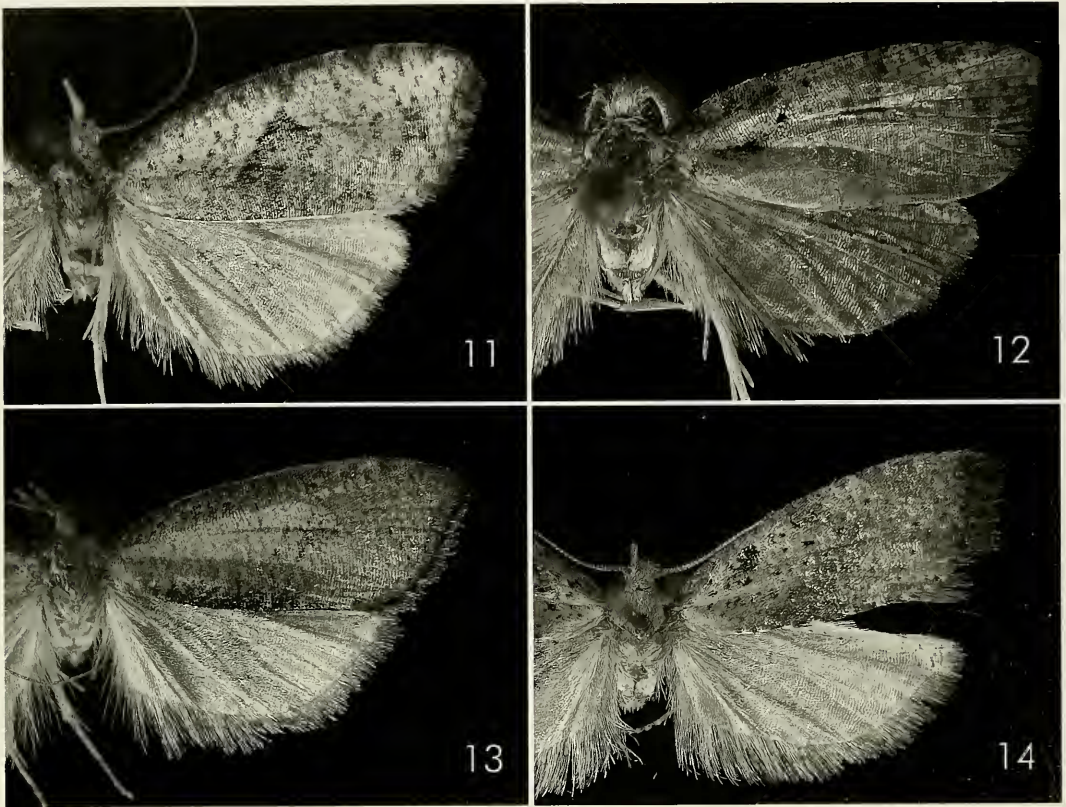
Holotype.—♀, Colombia, Central Cordilleras (BMNH).

Oregocerata quadrifurcata Razowski and
Brown, new species

(Figs. 8, 14)

Diagnosis.—*Oregocerata quadrifurcata* is externally similar to *O. caucana*; it can be distinguished from its congeners by its nearly uniform pale brown forewing (Fig. 14). The male genitalia (Fig. 8) are highly divergent from other *Oregocerata*, with a greatly expanded, quadrifurcate distal portion of the uncus, a pair of short, blunt processes distally from the gnathos, and a highly modified base of the sacculus, all of which are interpreted as autapomorphies. The dorsum of the aedeagus lacks the spiny lobes of the anellus present in many species. The species is provisionally assigned to the genus on the basis of the digitate process at the base of the sacculus and the patch of long, flattened orange scales extending from the base of the proboscis to between the foreleg coxae, both characters of which are characteristic of *Oregocerata*.

Description.—*Head*: Vertex cream, weakly tinged with brownish; labial palpus elongate, pale grayish brown on inner surface, pale orange brown on outer surface, rust colored near junction of segments II and III; fan-shaped patch of flattened orange scales extending from base of proboscis to between prothoracic coxae. *Thorax*: Dorsum concolorous with head. Prothoracic leg with hairpencil. Forewing length 9.0 mm (n = 1), apex short, sharp; termen somewhat oblique; ground color pale grayish brown in basal area, tinged pale yellowish brown in remaining portion of wing; dorsum and costa with pale orange-brown to rust-colored scaling; tiny black dots in median and subcostal parts of postbasal field, along termen, and scattered in posterior half of wing; dorsum dotted with white; markings darker than suffusion, diffuse, represented by medial fascia and subapical spots. Hindwing cream colored, lighter towards base, with weak strigulation in terminal area. *Abdomen*: Male genitalia (Fig. 8; drawn from GS USNM 68623) with teg-



Figs. 11–14. Adults of *Oregocerata*. 11, *O. triangulana*, 12, *O. submontana*, 13, *O. caucana*, 14, *O. quadrifurcata*.

umen broad; uncus large, curved, greatly swollen distally, with large, flattened, crown-shaped apex; socii large, comparatively broad, densely setose, extending nearly to distal end of gnathos arms; gnathos arms relatively broad, with a pair of short, blunt subterminal processes; transtilla a slender bridge; valva nearly parallel-sided in basal half, weakly attenuate in distal half, truncate distally; dorsally projecting process at base of sacculus large, thorny, with a smaller subtriangular prominence immediately distad becoming contiguous with sacculus; phallus short, aedeagus slightly longer than phallobase, with slender termination, curved in basal 0.4; vesica with one large curved and one smaller, straight cornutus. Female: Unknown.

Holotype.—♂, Colombia, Cauca, Pára-

mo de Parace, Lake San Rafael, 27 Jan 1959, J. F. G. Clarke (USNM).

Etymology.—The specific epithet refers to the somewhat quadrifurcate tip of the uncus.

ACKNOWLEDGMENTS

We thank the following for allowing us to examine specimens in their care: Jerry Powell (UCB), Kevin Tuck (BMNH), and Vitor Becker (Serra Bonita, Brazil). We thank the following for helpful reviews of the manuscript: Stuart McKamey, USDA Systematic Entomology Laboratory, National Museum of Natural History, Washington, D.C. and Daniel Rubinoff, University of Hawaii, Honolulu. The figures were drawn by Józef Razowski and David Adamski; the latter prepared the plates.

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